



68-19-05

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Docket No. 1232-4694

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Atsushi INAGAKI

Group Art Unit: 2612

Serial No.: 09/821,287

Examiner: Luong Truong NGUYEN

Filed: March 29, 2001

For: INFORMATION DISPLAY CONTROL IN IMAGE SENSING APPARATUS

**EXPRESS MAIL CERTIFICATE**

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**TRANSMITTAL OF CERTIFIED TRANSLATION  
OF CONVENTION PRIORITY DOCUMENT**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

An Amendment Under 37 C.F.R. § 1.116 was filed on August 23, 2005 in the above identified application in which Applicants pointed out that a reference of record-Fredlund (USP 6,724,427)- filed on June 20, 2000- is not available as prior art against this application. While the instant application was filed on March 29, 2001, priority is claimed under 35 USC § 119 to Japanese Patent Application No. 2000-097628, filed on March 31, 2000. Fredlund, as set forth in the August 23 Amendment, is thus not available as prior art against this application.

As discussed at page 6 of the August 23 Amendment, submitted herewith is a copy of a certified English translation of Japanese Patent Application No. 2000-097628, a certified copy of which was filed on May 25, 2001. Applicants requested in the filed Amendment, and reiterate here, that the rejections issued in the May 24, 2005 Final Office Action based on Fredlund are improper and should be withdrawn.

In view of the foregoing, and as set forth in further detail the August 23 Amendment, Applicants respectfully submit that this application is in condition for allowance which action is earnestly requested.

In the event that a telephone conference would facilitate prosecution of the application in any way, the Examiner is invited to contact the undersigned at the number provided. An early and favorable examination on the merits is respectfully requested.

**AUTHORIZATION**

While no fees are believed due for the filing of this paper, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 13-4500, Order No. 1232-4694.

Respectfully submitted,  
MORGAN & FINNEGAN, L.L.P.

Dated: September 15, 2005

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DECLARATION



I, Miharu Hayashi, residing at 7th FL., SHUWA KIOICHO  
ARK BLDG., 3-6, KIOICHO, CHIYODA-KU, TOKYO, JAPAN,

hereby declare that I have a thorough knowledge of  
Japanese and English languages, and that the attached  
pages contains a correct translation into English of the  
application document of Japanese Patent Application No.  
2000-097628 filed on March 31, 2000, in the name of CANON  
KABUSHIKI KAISHA.

I further declare that all statements made herein  
of my own knowledge are true and that all statements made  
on information and belief are believed to be true; and  
further that these statement were made with the knowledge  
that willful false statements and the like so made, are  
punishable by fine or imprisonment, or both, under  
Section 1001 of Title 18 of the United States Code and  
that such willful false statements may jeopardize the  
validity of the application or any patent issuing thereon.

Signed this 2nd day of September, 2005.

  
Miharu Hayashi

Translation of Japanese Patent Application No. 2000-097628

[Type of Document(s)]	Application for patent
[Reference Number]	4043037
[Filing Date]	March 31, 2000
[Addressee]	Director-General of the Patent Office, Esq.
[International Patent Classification]	H04L 5/225 G03B 7/26
[Title of Invention]	IMAGE SENSING APPARATUS, IMAGE SENSING METHOD AND STORAGE MEDIUM
[Number of Claim(s)]	6
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[Detail of Fee(s)]	
[Register Number of Prepayment]	011707
[Amount of Payment]	21000
[List of Attached Documents]	
[Classification]	Specification 1
[Classification]	Drawing(s) 1
[Classification]	Abstract 1
[Number of General Power of Attorney]	9703800
[Proof Required? Y/N]	Yes

[Type of the Document]      Specification

[Title of the Invention]    IMAGE SENSING APPARATUS,  
IMAGE SENSING METHOD AND STORAGE MEDIUM

[What Is Claimed Is]

5    [Detailed Description of the Invention]

          [Claim 1]    An image sensing apparatus having  
image sensing means, display means for displaying an  
image obtained from said image sensing means and  
information about a status of the image sensing  
10    apparatus, power supply means for supplying electrical  
power to a processing circuits such as said image  
sensing means and said display means, and control means  
for controlling operating status of said display means  
and said power supply means,  
15            wherein, in displaying said information about  
said display means when said display means is in non-  
operation setting, said control means controls said  
display means and said power supply means so as to  
display said information by making said display means  
20    operate for a predetermined period.

          [Claim 2]    The image sensing apparatus  
according to claim 1, wherein said control means  
controls to change said predetermined period in  
accordance with power supply level of said power supply  
25    means.

          [Claim 3]    The image sensing apparatus  
according to claim 1 or 2, wherein the information

about the status of the image sensing apparatus is information representing a status in which an operation of the image sensing apparatus is interfered.

[Claim 4]      The image sensing apparatus  
5    according to claim 3, wherein the information  
representing the status in which the operation of the image sensing apparatus is interfered is information representing that any of operations of a power source, a recording medium for storing an image, and an image  
10   sensing lens is interfered.

[Claim 5]      A display method in an image  
sensing apparatus having display means for displaying an image obtained by image sensing means and information about a status of the image sensing  
15   apparatus, comprising: a step of displaying said information about said display means when said display means is in non-operation setting; and a step of monitoring a display period in said step so as not to exceed a predetermined period.

20      [Claim 6]      A storage medium storing a program for realizing the display method in the image sensing apparatus according to claim 5.

[Detailed Description of the Invention]

[0001]

25      [Technical Field of the Invention]

The present invention relates to an image sensing apparatus and, more particularly, to display the image sensing apparatus.

[0002]

5 [Prior Art]

Image sensing apparatuses such as an electronic camera for recording and playing back still images and moving images by using a memory card having a solid-state memory device as a recording medium have already  
10 been available. Electronic cameras having not only optical finders but also electronic finders such as a color liquid crystal panel are also on the market.

[0003]

Such an electronic camera displays pieces of  
15 information about the apparatus status (the remaining number of sensible images, setting information such as the image size, warnings and the like) on a dedicated information display unit such as a monochrome LCD, and an electronic finder.

20 [0004]

[Problems That the Invention Is to Solve]

This image sensing apparatus such as a conventional electronic camera can be downsized by displaying pieces of information about the apparatus  
25 status on only an electronic finder such as a color liquid crystal panel because the dedicated information display unit can be eliminated.

[0005]

If, however, the color liquid crystal panel is always kept ON in order to display pieces of information about the apparatus status, the electronic camera operation time and the number of sensible images  
5 greatly decrease owing to high electric consumption of the color liquid crystal panel or the like.

[0006]

The present invention has been made in  
10 consideration of the above situation, and has as its object to provide an image sensing apparatus, an image sensing method, and a recording medium, which consume less electricity when displaying only information about a status of the apparatus on an image display means.

15 [0007]

[Means of Solving the Problems]

In order to achieve the foregoing objects, an image sensing apparatus is configured as described by (1) to (4), and a display method in an image sensing  
20 apparatus is configured as described by (5), and a storage medium is configured as described by (6).

[0008]

(1) An image sensing apparatus having image sensing means, display means for displaying an image  
25 obtained from said image sensing means and information about a status of the image sensing apparatus, power supply means for supplying electrical power to a



processing circuits such as said image sensing means and said display means, and control means for controlling operating status of said display means and said power supply means,

- 5            wherein, in displaying said information about said display means when said display means is in non-operation setting, said control means controls said display means and said power supply means so as to display said information by making said display means  
10   operate for a predetermined period.

[0009]

- (2)    The image sensing apparatus as described in (1), wherein said control means controls to change said predetermined period in accordance with power  
15   supply level of said power supply means.

[0010]

- (3)    The image sensing apparatus as described in (1) or (2), wherein the information about the status of the image sensing apparatus is information  
20   representing a status in which an operation of the image sensing apparatus is interfered.

[0011]

- (4)    The image sensing apparatus as described in (3), wherein the information representing the status  
25   in which the operation of the image sensing apparatus is interfered is information representing that any of operations of a power source, a recording medium for

storing an image, and an image sensing lens is interfered.

[0012]

(5) A display method in an image sensing  
5 apparatus having display means for displaying an image  
obtained by image sensing means and information about a  
status of the image sensing apparatus, comprising: a  
step of displaying said information about said display  
means when said display means is set in non-operation  
10 setting; and a step of monitoring a display period in  
said step so as not to exceed a predetermined period.

[0013]

(6) A storage medium storing a program for  
realizing the display method in the image sensing  
15 apparatus as described in (5).

[0014]

[Mode for Carrying Out the Invention]

Preferred embodiments of the present invention  
will be described in detail by taking an image sensing  
20 apparatus as an example. It should be noted that the  
present invention is not limited to an image sensing  
apparatus, and can be realized in the forms of a  
display method in an image sensing apparatus and a  
storage medium storing a program for realizing the  
25 display method as supported by the explanation in  
Embodiments.

[0015]

## [Embodiments]

## (First Embodiment)

Fig. 1 is an diagram showing a configuration of  
"an image sensing apparatus" as the first embodiment of  
the present invention.

## [0016]

In Fig. 1, reference numeral 100 denotes an  
image sensing apparatus. Reference numeral 10 denotes  
an image sensing lens made up of a zoom lens and a  
focus lens each having an in-focus position with  
respect to an object to be sensed; 12, a shutter having  
a diaphragm function; 14, an image sensing device which  
converts an optical image into an electric signal; 16,  
an A/D converter which converts an analog signal output  
from the image sensing device 14 into a digital signal.

## [0017]

Reference numeral 18 denotes a timing generator  
which supplies a clock signal and a control signal  
respectively to the A/D converter 16 and a D/A  
converter 26, under the control of a memory controller  
22 and a system controller 50.

## [0018]

Reference numeral 20 denotes an image processor  
which performs predetermined pixel interpolation  
processing, color conversion processing and the like on  
data from the A/D converter 16 or data from the memory  
controller 22.

[0019]

The image processor 20 performs predetermined calculation processing using the sensed image data, and the system controller 50 performs TTL (Through-The-  
5 Lens) AF (Auto Focus) processing, AE (Auto Exposure) processing, EF (pre-Flash) processing on exposure control means 40 and distance measurement control means 42, based on the result of calculations.

[0020]

10 Further, the image processor 20 performs predetermined calculation processing using the sensed image data, and performs TTL AWB (Auto White Balance) processing, based on the result of calculations.

[0021]

15 The memory controller 22 controls the A/D converter 16, the timing generator 18, the image processor 20, an image display memory 24, the D/A converter 26, a memory 30 and a compression/expansion circuit 32.

20 [0022]

The data outputted from the A/D converter 16 is written into the image display memory 24 or the memory 30 via the image processor 20 and the memory controller 22, or only via the memory controller 22.

25 [0023]

Reference numeral 24 denotes the image display memory; 26, the D/A converter; and 28, an image display

unit comprising a TFT LCD or the like. Image data for display written into the image display memory 24 is displayed on the image display unit 28 via the D/A converter 26.

5 [0024]

An electronic finder function can be realized by sequentially displaying sensed image data on the image display unit 24.

[0025]

10 Further, the image display unit 28 can be arbitrarily turn ON/OFF in accordance with an instruction from the system controller 50. If the display is turned OFF, the electric consumption of the image sensing apparatus 100 can be greatly reduced.

15 [0026]

The memory 30, used for storing sensed still images and moving images, has a sufficient storage capacity for storing a predetermined number of still images and a moving image for a predetermined time.

20 [0027]

Accordingly, in sequential image sensing to sequentially obtain a plural number of still images or panoramic images sensing, a large amount of image data can be written into the memory 30 at a high speed.

25 Further, the memory 30 may be used as a work area for the system controller 50.

[0028]

The compression/expansion circuit 32 compresses or expands image data by adaptive discrete cosine transformation (ADCT) or the like. The compression/expansion circuit 32 reads image data stored in the memory 30, performs compression or expansion processing on the read image data, and writes the processed data into the memory 30.

[0029]

The exposure control means 40 controls the shutter 12 having the diaphragm function. The exposure control means 40 interlocked with a flash unit 404 also has a flash adjusting function.

[0030]

The distance measurement control means 42 controls focusing of the image sensing lens 10. Reference numeral 44 denotes zoom control means which controls zooming of the image sensing lens 10. Reference numeral 46 denote barrier control means which controls the operation of protecting means 102 which is a barrier.

[0031]

Numeral 404 denotes a flash unit which has an AF auxiliary light projection function and a flash adjusting function.

[0032]

The exposure control means 40 and the distance measurement control means 42 are controlled using the

TTL method. The system controller 50 controls the exposure control means 40 and the distance measurement control means 42, in accordance with the result of calculations by the image processor 20 based on sensed  
5 image data.

[0033]

The system controller 50 controls the overall image sensing apparatus 100. Reference numeral 52 denotes a memory which stores the constants, variables,  
10 and programs for operation of the system controller 50.

[0034]

Reference numeral 54 denotes a display unit which is constituted by an LED, a sound generating device and the like, and notifies the user of operating  
15 statuses, in correspondence with execution of program by the system controller 50.

[0035]

Reference numeral 56 denotes an electrically erasable and recordable nonvolatile memory such as an  
20 EEPROM.

[0036]

Reference numerals 60, 61, 62, 64, 66 and 70 denote operation means for inputting various operation instructions to the system controller 50, comprising a  
25 single or plurality of combinations of switches, dials, touch panels, a pointing device by line-of-sight detection, a voice recognition device, and the like.

[0037]

Next, the operation units will be described.

[0038]

The operation unit 60 is a power switch for  
5 turning ON/OFF the image sensing apparatus 100. The  
operation unit 61 is a mode switch for setting an image  
sensing mode and a playback mode.

[0039]

The operation unit 62 is a shutter switch SW1  
10 turned ON by half stroke of a shutter button (not  
shown), to instruct start of the operations of the AF  
(Auto Focus) processing, the AE (Auto Exposure)  
processing, the AWB (Auto White Balance) processing,  
the EF (pre-Flash) processing and the like.

15 [0040]

The operation unit 64 is a shutter switch SW2  
turned ON by full stroke of the shutter button (not  
shown), to instruct start of a series of operations of  
exposure processing to write a signal read from the  
20 image sensing device 12 into the memory 30, via the A/D  
converter 16 and the memory controller 22, development  
processing by using calculations by the image processor  
20 and the memory controller 22, and recording  
processing to read the image data from the memory 30,  
25 compress the image data by the compression/expansion  
circuit 32, and write the compressed image data into a  
recording medium 200 or 210.



[0041]

The operation unit 66 is an image display ON/OFF switch which can set ON/OFF of the image display unit 28. With this function, in image sensing using the optical finder 104, power supply to the image display unit 28 comprising a TFT LCD or the like can be cut to save the power.

[0042]

The operation unit 70 comprises various buttons and touch panels including a menu button, a set button, a macro/non-macro selection button, a multi-image reproduction/repaging button, a flash set button, a single-shot/sequential/self-timer image sensing selection button, a forward (+) menu item selection button, a backward (-) menu item selection button, a forward (+) reproduction image search button, a backward (-) reproduction image search button, an image sensing quality selection button, an exposure correction button, and a date/time set button.

[0043]

Reference numeral 80 denotes power control means comprising a battery detection circuit, a DC-DC converter, a switch circuit to select the block to be energized and the like. The power control means 80 detects the attached/detached state of the battery, the battery type and the remaining battery power level, controls the DC-DC converter based on the results of

detection and an instruction from the system controller 50, and supplies a necessary voltage to the respective parts including the recording medium for the necessary period.

5 [0044]

Reference numeral 82 denotes a connector; 84, a connector; and 86, power source means comprising a primary battery such as an alkaline battery or a lithium battery, a secondary battery such as an NiCd  
10 battery, an NiMH battery or an Li battery, an AC adapter, and the like.

[0045]

Reference numerals 90 and 94 denote interfaces for recording media such as a memory card or a hard  
15 disk; 92 and 96, connectors for connection with the recording media such as a memory card or a hard disk; and 98, recording medium attached/detached state detection means which detects whether the recording medium 200 or 210 is attached to the connector 92 or  
20 connector 96.

[0046]

In the first embodiment, two systems of interfaces and connectors for connection with the recording media are employed. However, a single or  
25 plurality of systems of interfaces and connectors may be provided. Further, interfaces and connectors pursuant to different standards may be combined.

[0047]

As the interfaces and connectors, cards in conformity with PCMCIA card standards and cards in conformity with CF (Compact Flash) card standards may  
5 be used.

[0048]

In a case where cards and connectors in conformity with the PCMCIA card standards, CF card standards and the like are used as the interfaces 90  
10 and 94 and the connectors 92 and 96, image data and management information attached to the image data can be transmitted/received to/from other peripheral devices such as a computer and a printer by connection with various communication cards such as a LAN card, a  
15 modem card, a USB card, an IEEE 1394 card, a P1284 card, a SCSI card and a PHS card.

[0049]

The protecting means 102 as a barrier covers the image sensing portion of the image sensing apparatus  
20 100 including the lens 10, thus prevents dirt and breakage of the image sensing portion.

[0050]

The optical finder 104 can be used for image sensing without the electronic finder function by the  
25 image display unit 28. Further, a part of the functions of the display unit 54, such as focused state display, vibration warning display, flash charging

display, shutter speed display, aperture value display, and exposure correction display, is set.

[0051]

Reference numeral 110 denotes communication  
5 means having various communication functions which realize RS232C, USB, IEEE 1394, P1284, SCSI, a modem, a LAN, radio communication and the like.

[0052]

Reference numeral 112 denotes a connector for  
10 connecting the image sensing apparatus 100 to another device, or denotes an antenna for radio communication.

[0053]

The recording medium 200 is realized by memory cards, hard disks or the like. The recording medium  
15 200 respectively comprises a recording unit 202 of semiconductor memory, a magnetic disk or the like, an interface 204 for communication with the image sensing apparatus 100, and a connector 206 for connection with the image sensing apparatus 100.

20 [0054]

The recording medium 210 is realized by memory cards, hard disks or the like. The recording medium  
210 respectively comprises a recording unit 212 of semiconductor memory, a magnetic disk or the like, an  
25 interface 214 for communication with the image sensing apparatus 100, and a connector 216 for connection with the image sensing apparatus 100.

[0055]

The operation of the first embodiment will be explained with reference to Figs. 2 to 4.

[0056]

5 Figs. 2 and 3 are flow charts showing the main routine in the image sensing apparatus 100 according to the first embodiment. The operation of the image sensing apparatus 100 will be described with reference to Figs. 2 and 3.

10 [0057]

The system controller 50 initializes flags, control variables and the like, in response to power-on operation such as battery exchange (see S101. Same for the rest). The system controller 50 checks the status  
15 of the power switch 60 (S102). If the power switch 60 is set OFF, the system controller 50 performs predetermined end processing such that the system controller 50 changes the display of each display unit to an end status, closes the barrier of the protecting  
20 means 102 to protect the image sensing unit, stores in the nonvolatile memory 56 necessary parameters, set values and set modes including the flags, the control variables and the like, and causes the power control means 80 to stop unnecessary power to each part of the  
25 image sensing apparatus 100 including the display unit 28 (S105). Then, the system controller 50 returns to S102.

[0058]

If the power switch 60 is set ON in S102, the system controller 50 determines the set position of the mode switch 61 (S103). If the mode switch 61 is set in  
5 the playback mode, the system controller 50 executes playback processing (S104), then returns to S102.

[0059]

If the mode switch 61 is set in the image sensing mode in S103, the system controller 50 causes  
10 the power control means 80 to determine whether the remaining capacity or operating status of the power source 86 formed from a battery or the like may cause a trouble in the operation of the image sensing apparatus 100 (S106). If it is determined in S106 that it may  
15 cause a trouble, the system controller 50 executes predetermined warning (S109), and returns to S102. Processing in S109 will be described later with reference to Fig. 4.

[0060]

20 If it is determined in S106 that there is no problem in the power source 86, the system controller 50 determines whether the operating status of the recording medium 200 or 210 may cause a trouble in the operation of the image sensing apparatus 100,  
25 particularly recording/playback operation of image data on/from the recording medium (S107). If it is determined in S107 that it may cause a trouble, the

system controller 50 executes predetermined warning (S109), and returns to S102.

[0061]

If it is determined in S107 that there is no  
5 problem in the operating state of the recording medium  
200 or 210, the system controller 50 initializes the  
image sensing lens 10, and determines whether the image  
sensing lens 10 operates normally (S108). If the  
initialization of the image sensing lens 10 is not  
10 performed properly, the system controller 50 uses the  
display unit 54 to issue a predetermined warning using  
an image or a sound (S109), and then returns to S102.

[0062]

If it is determined in S108 that there is no  
15 problem in the image sensing lens 10, the system  
controller 50 checks the status of an image display  
flag (S110). If the image display flag is set ON, the  
system controller 50 checks the image display state of  
the image display unit 28 (S118). If the image display  
20 ON state is not determined, the system controller sets  
the image display flag and turns the display of the  
display unit 28 ON (S119). Then, the system controller  
50 sets a through display status in which images sensed  
by the image sensing device 14 are sequentially  
25 displayed (step S120), and advances to step S121.

[0063]

In the through display state, electronic finder function is realized by displaying data sequentially written into the image display memory 24 via the image sensing device 12, the A/D converter 16, the image processor 20 and the memory controller 22, on the image display unit 28 via the memory controller 22 and the D/A converter 26.

[0064]

If the image display state of the image display unit 28 is ON in S118, the process proceeds to S121. If a setting status display flag is set ON in S121, the system controller 50 displays the setting status on the image display unit 28 (S122), and advances to S131. If the setting status display flag is set OFF in S121, the process shifts to S131.

[0065]

If the image display flag is set OFF in S110, the system controller 50 checks the status display flag (S111). If the status display flag is set ON, the system controller 50 sets the image display of the image display unit 28 ON (S112), and displays the setting status on the image display unit 28 (S113). The system controller 50 keeps displaying the setting information for a predetermined status display period (S114). After the period has elapsed, the system controller 50 sets the status display flag OFF (S115), and stops displaying the setting information (S116).



Then, the system controller 50 sets the image display of the image display unit 28 OFF (S117), and shifts to S131.

[0066]

- 5        If the image display flag is set OFF in S111, the process directly shifts to S131.

[0067]

- If the shutter switch SW1 is not pressed in S131, the process returns to S102. If the shutter switch SW1  
10    is pressed in S131, the system controller 50 checks the status of the image display flag stored in the internal memory of the system controller 50 or the memory 52 (S132). If the image display flag is set ON, the system controller 50 sets to freeze display state the  
15    image display unit 28 (S133), and advances to S134.

[0068]

- In freeze display state, a frozen image is displayed on the electrical finder by inhibiting rewrite of image data in the image display memory 24  
20    via the image sensing device 12, the A/D converter 16, the image processor 20 and the memory controller 22, and displaying latest image data in the image display memory 24 on the image display unit 28 via the memory controller 22 and the D/A converter 26.

- 25        [0069]

      If the image display flag is set OFF (S132), the process shifts to S134. The system controller 50

performs distance measurement processing, adjusts the focus of the image sensing lens 10 to an object to be sensed, and performs photometry processing to determine an F-number and shutter speed (S134). If necessary,  
5 the system controller 50 also sets the flash unit in photometry processing.

[0070]

After the end of distance measurement/photometry processing in S134, the system controller 50 checks the  
10 status of the image display flag stored in the internal memory of the system controller 50 or the memory 52 (S135). If the image display flag is set ON, the system controller 50 sets the display status of the image display unit 28 to the through display status  
15 (S136), and advances to S137. Note that the through display status in S136 is the same operating status as the through status set in S120.

[0071]

If the image display flag is not set in S135,  
20 the process shifts to S137. If the shutter switch SW2 is not pressed in S137, and the shutter switch SW1 is released in S138, the process returns to S102. If the shutter switch SW2 is pressed in S137, the system controller 50 checks the status of the image display  
25 flag stored in the status of the internal memory of the system controller 50 or the memory 52 (S139). If the image display flag is set ON, the system controller 50

sets the display status of the image display unit 28 to a single color display status (S140), and the process advances to S141.

[0072]

5           Single color display processing of the image display unit 28 is realized by displaying replaced image data representing a single color on the image display unit 28 via the memory controller 22 and the D/A converter 26, instead of sensed image data written  
10 in the image display memory 24 via the image sensing device 12, the A/D converter 16, the image processor 20 and the memory controller 22.

[0073]

          If the image display flag is set OFF in S139,  
15 the process shifts to S141. The system controller 50 executes image sensing processing including exposure processing of writing sensed image data in the memory 30 via the image sensing device 12, the A/D converter 16, the image processor 20 and memory controller 22 or  
20 via the memory controller 22 directly from the A/D converter 16, and developing processing of reading out image data written in the memory 30 and performing various processes by using the memory controller 22 and if necessary, the image processor 20 (S141).

25           [0074]

          The system controller 50 checks the status of the image display flag stored in the internal memory of

the system controller 50 or the memory 52 (S142). If the image display flag is set ON, the system controller 50 controls to perform quick review display (S144). In this case, the image display unit 28 is always used as  
5 an electronic finder even during an image sensing operation, and quick review display is also done immediately after the image sensing operation.

[0075]

If the image display flag is set OFF in S142,  
10 the system controller 50 sets the image display of the image display unit 28 ON (S143), controls to perform quick review display (S144).

[0076]

The system controller 50 reads out sensed image  
15 data written in the memory 30, performs various image processes by using the memory controller 22 and if necessary, the image processor 20, and performs image compression processing corresponding to the set mode by using the compression/expansion circuit 32. Thereafter,  
20 the system controller 50 executes recording processing of writing image data in the recording medium 200 or 210 (S145).

[0077]

If the image display flag is set ON in S146, the  
25 system controller 50 sets the display status of the image display unit 28 to the through display status (S147), and the process advances to S150.

[0078]

In this case, after the user confirms a sensed image by quick review display on the image display unit 28, the system controller 50 can set the through display status of sequentially displaying sensed image data for the next image sensing operation.

[0079]

If the image display flag is set OFF (S146), the system controller 50 sets the image display of the image display unit 28 OFF (S148), sets the status display flag ON (S149). Then, the process shifts to S150.

[0080]

If the shutter switch SW1 is pressed in S150, the process returns to S137, and waits for the next image sensing operation.

[0081]

If the shutter switch SW1 is released in S150, the system controller 50 ends a series of image sensing operations, and returns to S102.

[0082]

Fig. 4 is a flow chart showing warning processing in S109.

[0083]

In warning processing, the system controller 50 checks the status of the image display unit 28 (S401). If the image display is OFF, the system controller 50

sets the image display of the image display unit 28 ON (S402), and displays a warning on the image display unit 28 (S403). The system controller 50 keeps displaying the warning for a predetermined warning display period (S404), stops displaying the warning when the period has elapsed (S405), sets the display of the image display unit 28 OFF (S406), and ends the processing.

[0084]

10        If the image display is ON in S401, the system controller 50 displays a warning on the image display unit 28 (S407), and ends the processing.

[0085]

As described above, according to the first  
15        embodiment, to display information about the image sensing apparatus when the image display unit is OFF, the control means controls the image display unit and the power source so as to set the image display unit ON for only a predetermined time and display the  
20        information. In this manner, it is possible to suppress the electric consumption, thereby prolonging the operation time.

[0086]

<Second Embodiment>

25        The second embodiment adds the following processing after processes in S114 of Fig. 2B and S404 of Fig. 4 in the first embodiment. If the remaining

battery power level obtained from the power control means 80 becomes low in S114, the system controller 50 sets the predetermined status display period shorter and keeps the display ON till the end of the status display period. If the remaining battery power level obtained from the power control means 80 becomes low in step S404, the system controller 50 sets the predetermined warning display period shorter and keeps the display ON till the end of warning display period.

10 [0087]

[Effects of the Invention]

According to the present invention as described above, control means controls image display means and power source means so that, when the display means (referred to image display means hereinafter) for displaying an image obtained from image sensing means and information about a status of the image sensing apparatus is in non-operating state and when information about the image sensing apparatus is to be displayed, said image display means is set ON for a predetermined period to display said information. This suppresses the energy consumption and prolongs the operation time.

[0088]

25 Further, if power supply level of the power source becomes low when only information about a status of the image sensing apparatus is displayed in image

display means, the time to set the image display means to an operating state is made shorter, thereby prolonging the operation time. Furthermore, the user can know that the power supply level becomes low from the shortened display time.

[Brief Description of the Drawings]

[Fig. 1] A block diagram showing a configuration of an image sensing apparatus according to the first embodiment.

10 [Fig. 2] A flow chart showing the operation of the image sensing apparatus according to the first embodiment.

[Fig. 3] A flow chart showing the operation of the image sensing apparatus according to the first embodiment.

15

[Fig. 4] A flow chart showing a detailed operation of warning processing.

[Description of the Reference Numerals]

24 Image display memory

20 28 Image display unit

50 System controller

80 Power control means



[Type of the Document]      Abstract

[Abstract]

[Object]      To provide an image sensing apparatus, an  
image sensing method, and a recording medium, which  
5    consume less electricity when displaying only  
information about a status of the apparatus on an image  
display means.

[Means for Achieving the Object] In an image sensing  
apparatus having an image display unit 28 for  
10    displaying an image obtained from an image sensing  
element 14 and information about a status of the image  
sensing apparatus 100, when the image display unit 28  
is in non-operating setting, said information is  
displayed in said image display unit 28 for a  
15    predetermined period.

[Selected Drawing]    Fig. 1

FIG. 1

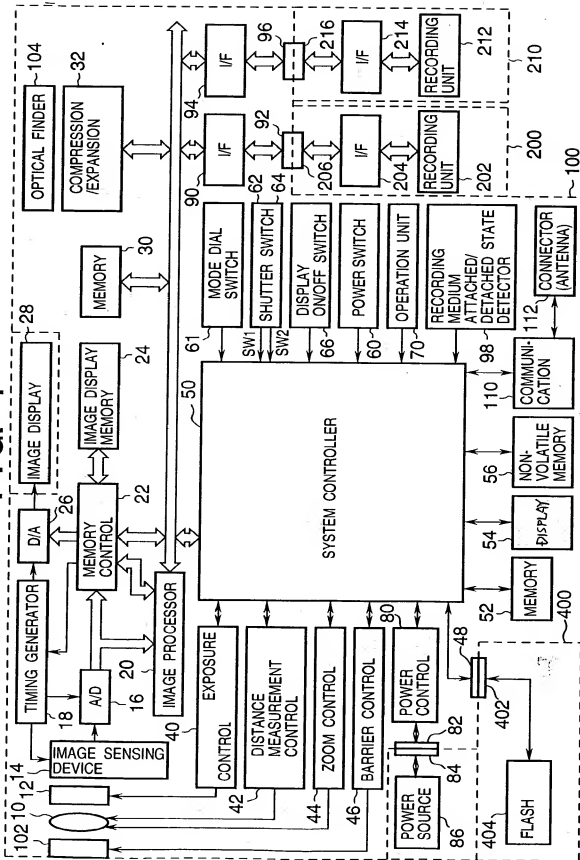


FIG. 2 (continue)

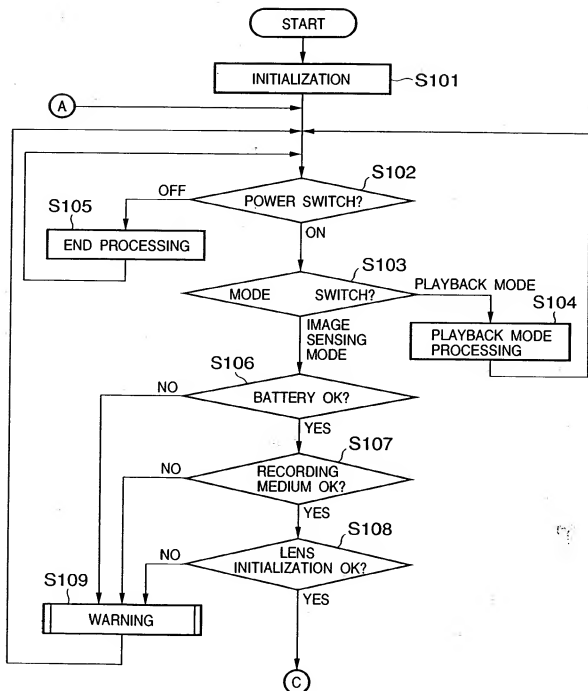




FIG. 2 (continued)

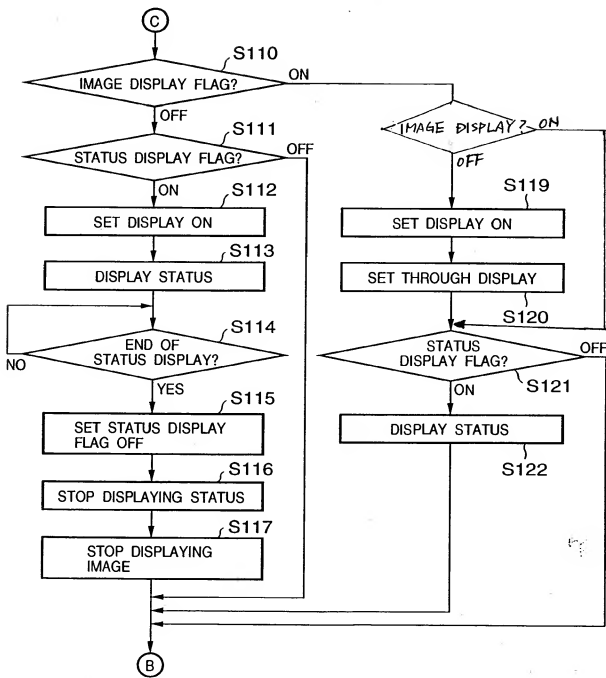


FIG. 3

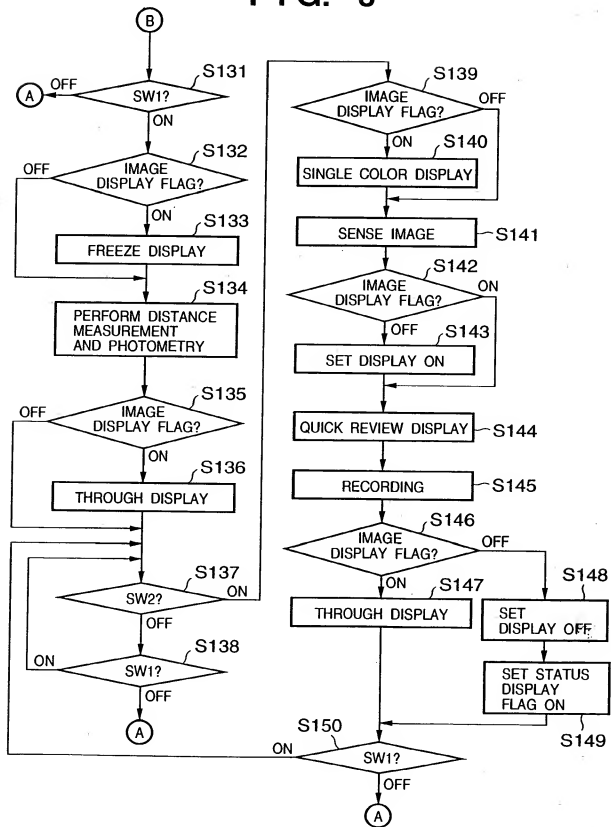




FIG. 4

